

Geometric Mean Calculator

Enter values into the red rows below. Result is in yellow box.

The geometric mean function in excel is:
`=geomean(num1,...,numx)`

#NUM!

Criteria Calculator

Beryllium - 7440417 ▼

Red fields are for data entry. Results are in green highlighted boxes after input.

1. Recalculate the FAV & CMC from GMAVs

Instructions: enter N (number of acceptable GMAVs) and the 4 GMAVs that have cumulative probabilities (P) closest to 0.05 for the contaminant of concern.

If $N < 59$, these are the four lowest GMAVs. N must be ≥ 8 (see User Manual for additional details). Red cells indicate where users data is input.

Input						
N	GMAV	Rank	ln(GMAV)	ln(GMAV) ²	P=R/(N+1)	sqrt(P)
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		Sum:	#NUM!	#NUM!	#N/A	#N/A
		$S^2 = \text{\#NUM!}$ $S = \text{\#NUM!}$ $L = \text{\#NUM!}$ $A = \text{\#NUM!}$				
Recalculated FAV and CMC:		FAV = #NUM! CMC = #NUM!				

2(a). Recalculate the CCC from GMCVs

Instructions: enter data input as in step 1 above using chronic test

Input						
N	GMCV	Rank	ln(GMCV)	ln(GMCV) ²	P=R/(N+1)	sqrt(P)
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		#N/A	#NUM!	#NUM!	#N/A	#N/A
		Sum:	#NUM!	#NUM!	#N/A	#N/A

2(b). Recalculate the CCC from the final ACR

Instructions: enter the acute-chronic ratio (ACR) in red colored cell

Input: Final ACR	
Recalculated CCC: (Estimated as FAV/ACR)	
CCC = #NUM!	

[File]

Aldrin - 309002

Calculator

[File]

$S^2 = \#NUM!$

$S = \#NUM!$

$L = \#NUM!$

$A = \#NUM!$

Recalculated FCV and CCC:

FCV = #NUM!

Calculator

[File]

Toxaphene - 8001352
Tributyltin (TBT) —
Zinc - 7440666

Calculator

Metals Criteria Calculator

1. Adjust Metals Criteria to Desired Hardness

Instructions: enter the water hardness in red colored cell

Input Hardness (mg CaCO ₃ /L)	Chemical	CMC (Acute) (µg/L)	CCC (Chronic) (µg/L)
100	Cadmium	2.01	0.25
	Chromium III	569.76	74.11
	Copper	13.44	8.96
	Lead	64.58	2.52
	Nickel	468.24	52.01
	Silver	3.22	—
	Zinc	117.18	118.14

2. Adjust Criteria (CMC or CCC) with Site-Specific Water Effect Ratio (WER)

Instructions: enter the criterion (CMC or CCC) and WER in red colored cells

Input criterion	WER	Site-specific criterion
2.00	1.00	2.00

3. Adjust Measured Metal Toxicity to Hardness = 100 mg CaCO₃ / L a. acute concentration

Instructions: enter the acute toxicity value and water hardness in red colored cells; select metal from list to specify slope

Input		Select metal:	Hardness Adjusted Acute Value
Acute Value (µg/L or mg/L)	Hardness (mg CaCO ₃ /L)		(µg/L or mg/L)
22.12	250	Cadmium	8.71
		1.0166	

b. chronic concentration

Instructions: enter the chronic toxicity value and water hardness in red colored cells; select metal from list to specify slope

Input		Select metal:	Hardness Adjusted Chronic Value
Chronic Value (µg/L or mg/L)	Hardness (mg CaCO ₃ /L)		(µg/L or mg/L)
22.12	50	Cadmium	36.97
		0.7409	

	Slope	
	acute	chronic
1		1
Cadmium	1.0166	0.7409
Chromium III	0.8190	0.8190
Copper	0.9422	0.8545
Lead	1.2730	1.2730
Nickel	0.8460	0.8460

[File]

Silver	1.7200	--
Zinc	0.8473	0.8473

Source: National Recommended WQ

Metals

National Recommended Water Quality Criteria (USEPA 2006)

Current National Recommended Water Quality Criteria Web Site

Pollutants	Chemical	CAS Number	Freshwater		Saltwater		Human Health criteria for the consumption of		FR Cite/ Source
			CMC ¹ (acute) (µg/L)	CCC ¹ (chronic) (µg/L)	CMC ¹ (acute) (µg/L)	CCC ¹ (chronic) (µg/L)	Water + Organism (µg/L)	Organism Only (µg/L)	
1	Antimony	7440360					5.6 ^B	640 ^B	65FR66443
2	Arsenic	7440382	340 ^{A,D,K}	150 ^{A,D,K}	69 ^{A,D,bb}	36 ^{A,D,bb}	0.018 ^{C,M,S}	0.14 ^{C,M,S}	65FR31682 57FR60848
3	Beryllium	7440417					Z		65FR31682
4	Cadmium	7440439	2.0 ^{D,E,K,bb}	0.25 ^{D,E,K,bb}	40 ^{D,bb}	8.8 ^{D,bb}	Z		EPA-822-R-01-001 65FR31682
5a	Chromium (III)	16065831	570 ^{D,E,K}	74 ^{D,E,K}			Total ^Z		EPA820/B-96-001 65FR31682
5b	Chromium (VI)	18540299	16 ^{D,K}	11 ^{D,K}	1,100 ^{D,bb}	50 ^{D,bb}	Total ^Z		65FR31682
6	Copper	7440508	13 ^{D,E,K,cc}	9.0 ^{D,E,K,cc}	4.8 ^{D,cc,ff}	3.1 ^{D,cc,ff}	1,300 ^U		65FR31682
7	Lead	7439921	65 ^{D,E,bb,gg}	2.5 ^{D,E,bb,gg}	210 ^{D,bb}	8.1 ^{D,bb}			65FR31682
8a	Mercury	7439976							62FR42160
8b	Methylmercury	22967926	1.4 ^{D,K,hh}	0.77 ^{D,K,hh}	1.8 ^{D,oo,hh}	0.94 ^{D,oo,hh}		0.3 mg/kg ¹	EPA823-R-01-001
9	Nickel	7440020	470 ^{D,E,K}	52 ^{D,E,K}	74 ^{D,bb}	8.2 ^{D,bb}	610 ^B	4,600 ^B	65FR31682 62FR42160 65FR31682
10	Selenium	7782492		5.0 ^T	290 ^{D,bb,dd}	71 ^{D,bb,dd}	170 ^Z	4200	65FR66443
11	Silver	7440224	3.2 ^{D,E,G}		1.9 ^{D,O}				65FR31682
12	Thallium	7440280					0.24	0.47	68FR75510
13	Zinc	7440666	120 ^{D,E,K}	120 ^{D,E,K}	90 ^{D,bb}	81 ^{D,bb}	7,400 ^U	26,000 ^U	65FR31682 65FR66443 EPA820/B-96-001
14	Cyanide	57125	22 ^{K,Q}	5.2 ^{K,Q}	1 ^{Q,bb}	1 ^{Q,bb}	140 ^B	140 ^B	57FR60848 68FR75510
15	Asbestos	1332214					7 million fibers/L ¹		57FR60848
16	2,3,7,8-TCDD (Dioxin)	1746016					5.0E-9 ^C	5.1E-9 ^C	65FR66443
17	Acrolein	107028					190	290	65FR66443
18	Acrylonitrile	107131					0.051 ^{B,C}	0.25 ^{B,C}	65FR66443
19	Benzene	71432					2.2 ^{B,C}	51 ^{B,C}	IRIS 01/19/00 65FR66443
20	Bromoform	75252					4.3 ^{B,C}	140 ^{B,C}	65FR66443
21	Carbon Tetrachloride	56235					0.23 ^{B,C}	1.6 ^{B,C}	65FR66443
22	Chlorobenzene	108907					130 ^{Z,U}	1,600 ^U	68FR75510
23	Chlorodibromomethane	124481					0.40 ^{B,C}	13 ^{B,C}	65FR66443
24	Chloroethane	75003							
25	2-Chloroethylvinyl Ether	110758							
26	Chloroform	67663					5.7 ^{C,P}	470 ^{C,P}	62FR42160
27	Dichlorobromomethane	75274					0.55 ^{B,C}	17 ^{B,C}	65FR66443
28	1,1-Dichloroethane	75343							
29	1,2-Dichloroethane	107062					0.38 ^{B,C}	37 ^{B,C}	65FR66443
30	1,1-Dichloroethylene	75354					330	7,100	68FR75510
31	1,2-Dichloropropane	78875					0.50 ^{B,C}	15 ^{B,C}	65FR66443
32	1,3-Dichloropropane	542756					0.34 ^C	21 ^C	68FR75510
33	Ethylbenzene	100414					530	2,100	68FR75510
34	Methyl Bromide	74839					47 ^B	1,500 ^B	65FR66443
35	Methyl Chloride	74873							65FR31682
36	Methylene Chloride	75092					4.6 ^{B,C}	590 ^{B,C}	65FR66443
37	1,1,2,2-Tetrachloroethane	79345					0.17 ^{B,C}	4.0 ^{B,C}	65FR66443
38	Tetrachloroethylene	127184					0.69 ^C	3.3 ^C	65FR66443
39	Toluene	108883					1,300 ^Z	15,000	68FR75510
40	1,2-Trans-Dichloroethylene	156605					140 ^Z	10,000	68FR75510
41	1,1,1-Trichloroethane	71556					Z		65FR31682
42	1,1,2-Trichloroethane	79005					0.59 ^{B,C}	16 ^{B,C}	65FR66443
43	Trichloroethylene	79016					2.5 ^C	30 ^C	65FR66443
44	Vinyl Chloride	75014					0.025 ^{C,kk}	2.4 ^{C,kk}	68FR75510
45	2-Chlorophenol	95578					81 ^{B,U}	150 ^{B,U}	65FR66443
46	2,4-Dichlorophenol	120832					77 ^{B,U}	290 ^{B,U}	65FR66443
47	2,4-Dimethylphenol	105679					380 ^B	850 ^{B,U}	65FR66443
48	2-Methyl-4,6-Dinitrophenol	534521					13	280	65FR66443
49	2,4-Dinitrophenol	51285					69 ^B	5,300 ^B	65FR66443
50	2-Nitrophenol	88755							
51	4-Nitrophenol	100027							
52	3-Methyl-4-Chlorophenol	59507					U	U	
53	Pentachlorophenol	87865	19 ^{J,K}	15 ^{J,K}	13 ^{bb}	7.9 ^{bb}	0.27 ^{B,C}	3.0 ^{B,C,H}	65FR31682 65FR66443
54	Phenol	108952					21,000 ^{B,U}	1,700,000 ^{B,U}	65FR66443
55	2,4,6-Trichlorophenol	88062					1.4 ^{B,C}	2.4 ^{B,C,U}	65FR66443
56	Acenaphthene	83329					670 ^{B,U}	990 ^{B,U}	65FR66443
57	Acenaphthylene	208968							
58	Anthracene	120127					8,300 ^B	40,000 ^B	65FR66443
59	Benzidine	92875					0.000086 ^{B,C}	0.00020 ^{B,C}	65FR66443
60	Benzo(a) Anthracene	56553					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
61	Benzo(a) Pyrene	50328					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
62	Benzo(b) Fluoranthene	205992					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
63	Benzo(ghi) Perylene	191242							
64	Benzo(k) Fluoranthene	207089					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
65	Bis(2-Chloroethoxy) Methane	111911							
66	Bis(2-Chloroethyl) Ether	111444					0.030 ^{B,C}	0.53 ^{B,C}	65FR66443
67	Bis(2-Chloroisopropyl) Ether	108601					1,400 ^B	65,000 ^B	65FR66443
68	Bis(2-Ethylhexyl) PhthalateX	117817					1.2 ^{B,C}	2.2 ^{B,C}	65FR66443
69	4-Bromophenyl Phenyl Ether	101553							
70	Butylbenzyl PhthalateW	85687					1,500 ^B	1,900 ^B	65FR66443
71	2-Chloronaphthalene	91587					1,000 ^B	1,600 ^B	65FR66443
72	4-Chlorophenyl Phenyl Ether	7005723							
73	Chrysene	218019					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
74	Dibenzo(a,h)Anthracene	53703					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
75	1,2-Dichlorobenzene	95501					420	1,300	68FR75510
76	1,3-Dichlorobenzene	541731					320	960	65FR66443
77	1,4-Dichlorobenzene	106467					63	190	68FR75510
78	3,3'-Dichlorobenzidine	91941					0.021 ^{B,C}	0.028 ^{B,C}	65FR66443
79	Diethyl PhthalateW	84662					17,000 ^B	44,000 ^B	65FR66443
80	Dimethyl PhthalateW	131113					270,000	1,100,000	65FR66443
81	Di-n-Butyl PhthalateW	84742					2,000 ^B	4,500 ^B	65FR66443
82	2,4-Dinitrotoluene	121142					0.11 ^C	3.4 ^C	65FR66443
83	2,6-Dinitrotoluene	606202							
84	Di-n-Octyl Phthalate	117840							
85	1,2-Diphenylhydrazine	122667					0.036 ^{B,C}	0.20 ^{B,C}	65FR66443
86	Fluoranthene	206440					130 ^B	140 ^B	65FR66443
87	Fluorene	86737					1,100 ^B	5,300 ^B	65FR66443
88	Hexachlorobenzene	118741					0.00028 ^{B,C}	0.00029 ^{B,C}	65FR66443
89	Hexachlorobutadiene	87683					0.44 ^{B,C}	18 ^{B,C}	65FR66443
90	Hexachlorocyclopentadiene	77474					40 ^U	1,100 ^U	68FR75510
91	Hexachloroethane	67721					1.4 ^{B,C}	3.3 ^{B,C}	65FR66443
92	Ideno(1,2,3-cd)Pyrene	193395					0.0038 ^{B,C}	0.018 ^{B,C}	65FR66443
93	Isophorone	78591					35 ^{B,C}	960 ^{B,C}	65FR66443
94	Naphthalene	91203							
95	Nitrobenzene	98953					17 ^B	690 ^{B,H,U}	65FR66443
96	N-Nitrosodimethylamine	62759					0.00069 ^{B,C}	3.0 ^{B,C}	65FR66443
97	N-Nitrosodi-n-Propylamine	621647					0.0050 ^{B,C}	0.51 ^{B,C}	65FR66443
98	N-Nitrosodiphenylamine	86306					3.3 ^{B,C}	6.0 ^{B,C}	65FR66443
99	Phenanthrene	85018							
100	Pyrene	129000					830 ^B	4,000 ^B	65FR66443
101	1,2,4-Trichlorobenzene	120821					35	70	68FR75510
102	Aldrin	309002	3.0 ^G		1.3 ^G		0.000049 ^{B,C}	0.000050 ^{B,C}	65FR31682 65FR66443
103	alpha-BHC	319846					0.0026 ^{B,C}	0.0049 ^{B,C}	65FR66443
104	beta-BHC	319857					0.0091 ^{B,C}	0.017 ^{B,C}	65FR66443
105	gamma-BHC (Lindane)	58899	0.95 ^K		0.16 ^G		0.98	1.8	65FR31682 68FR75510
106	delta-BHC	319868							
107	Chlordane	57749	2.4 ^G	0.0043 ^{Gaa}	0.09 ^G	0.004 ^{Gaa}	0.00080 ^{B,C}	0.00081 ^{B,C}	65FR31682 65FR66443
108	4,4'-DDT	50293	1.1 ^{Gii}	0.001 ^{Gaa,ii}	0.13 ^{Gii}	0.001 ^{Gaa,ii}	0.00022 ^{B,C}	0.00022 ^{B,C}	65FR31682 65FR66443

109	4,4'-DDE	72559				0.00022 ^{B,C}	0.00022 ^{B,C}	65FR66443
110	4,4'-DDD	72548				0.00031 ^{B,C}	0.00031 ^{B,C}	65FR66443
111	Dieldrin	60571	0.24 ^K	0.056 ^{K,O}	0.71 ^G	0.0019 ^{G,aa}	0.000052 ^{B,C}	0.000054 ^{B,C}
112	alpha-Endosulfan	95988	0.22 ^{G,Y}	0.056 ^{G,Y}	0.034 ^{G,Y}	0.0087 ^{G,Y}	62 ^B	89 ^B
113	beta-Endosulfan	33213659	0.22 ^{G,Y}	0.056 ^{G,Y}	0.034 ^{G,Y}	0.0087 ^{G,Y}	62 ^B	89 ^B
114	Endosulfan Sulfate	1031078					62 ^B	89 ^B
115	Endrin	72208	0.086 ^K	0.036 ^{K,O}	0.037 ^G	0.0023 ^{G,aa}	0.059	0.06
116	Endrin Aldehyde	7421934					0.29 ^B	0.30 ^{B,H}
117	Heptachlor	76448	0.52 ^G	0.0038 ^{G,aa}	0.053 ^G	0.0036 ^{G,aa}	0.000079 ^{B,C}	0.000079 ^{B,C}
118	Heptachlor Epoxide	1024573	0.52 ^{G,V}	0.0038 ^{G,V,aa}	0.053 ^{G,V}	0.0036 ^{G,V,aa}	0.000039 ^{B,C}	0.000039 ^{B,C}
119	Polychlorinated Biphenyls (PCBs)			0.014 ^{N,aa}		0.03 ^{N,aa}	0.000064 ^{B,C,N}	0.000064 ^{B,C,N}
120	Toxaphene	8001352	0.73	0.0002 ^{aa}	0.21	0.0002 ^{aa}	0.00028 ^{B,C}	0.00028 ^{B,C}

Footnotes

- ^A This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life.
- ^B This criterion has been revised to reflect The Environmental Protection Agency's q1* or RID, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) used to derive this criterion is 10,000.
- ^C This criterion is based on carcinogenicity of 10⁻⁶ risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10⁻⁵, move the decimal point in the recommended value one place to the right).
- ^D Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous criterion.
- ^E The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardnesses may be obtained by using the following equation: C = 100/H * C₁₀₀, where C is the criterion at hardness H, C₁₀₀ is the criterion at 100 mg/L hardness, and H is the hardness in mg/L.
- ^F Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005(pH)-4.869); CCC = exp(1.005(pH)-5.134). Values are based on a 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), Chlordane (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), and Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019).
- ^G This criterion is based on a 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), Chlordane (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), and Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019).
- ^H No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the 1986 *Quality Criteria for Water*.
- ^I This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).
- ^J This fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175 kg/day.
- ^K This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the 1995 Updates: *Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*. The CMC = 1/(1/(CMC1) + (1/(CMC2))) where 1 and 2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 g/l and 12.82 g/l.
- ^L EPA is currently reassessing the criteria for arsenic.
- ^M This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)
- ^N The derivation of the CCC for this pollutant (Endrin) did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
- ^O Although a new RID is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule is promulgated.
- ^P This recommended water quality criterion is expressed as g free cyanide (as CN₂).
- ^Q This value for selenium was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change.
- ^R This recommended water quality criterion for arsenic refers to the inorganic form only.
- ^S This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996 - CMC or 0.996 - CMC).
- ^T The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
- ^U This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
- ^V Although EPA has not published a completed criteria document for butylbenzyl phthalate it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that there is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.
- ^W This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
- ^X A more stringent MCL has been issued by EPA. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.
- ^Y This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), Chlordane (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), and Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019).
- ^Z This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (PDF) (105 pp., 4.5 MB) (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*), except possibly where the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
- ^{aa} The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), Chlordane (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019), and Dieldrin (PDF) (153 pp., 7.3 MB) (EPA 440/5-80-019).
- ^{ab} This recommended water quality criterion was derived in Ambient Water Quality Criteria Saltwater Copper Addendum (Draft, April 14, 1995) and was promulgated in the Interim final National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (EPA 440/5-80-019).
- ^{ac} EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.
- ^{ad} This recommended water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is inorganic mercury (II), then the total concentration of DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
- ^{ae} This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
- ^{af} This recommended water quality criterion is expressed as total cyanide, even though the IRIS RFD we used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in water are all considered as cyanide.
- ^{ag} This recommended water quality criterion was derived using the cancer slope factor of 1.4 (LMS exposure from birth).

Chemical	CAS Number	Freshwater		Saltwater		consumption of		FR Cite/ Source
		CMC ¹ (acute) (µg/L)	CCC ¹ (chronic) (µg/L)	CMC ¹ (acute) (µg/L)	CCC ¹ (chronic) (µg/L)	Water + Organism Only (µg/L)	Organism Only (µg/L)	
Non Priority Pollutants								
1 Alkalinity	—		20000 ^F					Gold Book
2 Aluminum (pH 6.5 - 9.0)	7429905	750 ^{ad}	87 ^{oa}					53FR3178
3 Ammonia	7664417	FRESHWATER CRITERIA ARE pH, Temperature and Life-stage DEPENDENT—SEE DOCUMENT D		SALTWATER CRITERIA ARE pH AND TEMPERATURE DEPENDENT				EPA822-R-99-014 EPA440/5-88-004
4 Aesthetic Qualities	—	NARRATIVE STATEMENT—SEE DOCUMENT						Gold Book
5 Bacteria	—	FOR PRIMARY RECREATION AND SHELLFISH USES—SEE DOCUMENT						Gold Book
6 Barium	7440393					1,000 ^A		Gold Book
7 Boron	—	NARRATIVE STATEMENT—SEE DOCUMENT						Gold Book
8 Chloride	16887006	860000 ^G	230000 ^G					53FR19028
9 Chlorine	7782505	19	11	13	7.5		^C	Gold Book
10 Chlorophenoxy Herbicide (2,4,5,-TP)	93721					10 ^A		Gold Book
11 Chlorophenoxy Herbicide (2,4-D)	94757					100 ^{A,C}		Gold Book
12 Chloropyrifos	2921882	0.083 ^G	0.041 ^G	0.011 ^G	0.0056 ^G			Gold Book
13 Color	—	NARRATIVE STATEMENT—SEE DOCUMENT F						Gold Book
14 Demeton	8065483		0.1 ^F		0.1 ^F			Gold Book
15 Ether, Bis (Chloromethyl)	542881					0.0010 ^{E,H}	0.00029 ^{E,H}	65FR66443
16 Gases, Total Dissolved	—	NARRATIVE STATEMENT—SEE DOCUMENT F						Gold Book
17 Guthion	86500		0.01 ^F		0.01 ^F			Gold Book
18 Hardness	—	NARRATIVE STATEMENT—SEE DOCUMENT						Gold Book
19 Hexachlorocyclo-hexane-Technical	319868					0.0123	0.0414	Gold Book
20 Iron	7439896		1000 ^F			300 ^A		Gold Book
21 Malathion	121755		0.1 ^F		0.1 ^F			Gold Book
22 Manganese	7439965					50 ^{A,O}	100 ^A	Gold Book
23 Methoxychlor	72435		0.03 ^F		0.03 ^F	100 ^{A,C}		Gold Book
24 Mirex	2385855		0.001 ^F		0.001 ^F			Gold Book
25 Nitrates	14797558					10,000 ^A		Gold Book
26 Nitrosamines	—					0.0008	1.24	Gold Book
27 Dinitrophenols	25550587					69	5300	65FR66443
28 Nonylphenol	1044051	28	6.6	7	1.7			71FR9337
29 Nitrosodibutylamine, N	924163					0.0063 ^{A,H}	0.22 ^{A,H}	65FR66443
30 Nitrosodiethylamine, N	55185					0.0008 ^{A,H}	1.24 ^{A,H}	Gold Book
31 Nitrosopyrrolidine, N	930552					0.016 ^H	34 ^H	65FR66443
32 Oil and Grease	—	NARRATIVE STATEMENT—SEE DOCUMENT F						Gold Book
33 Oxygen, Dissolved Freshwater	—	WARMWATER AND COLDWATER MATRIX—SEE DOCUMENT N						Gold Book
34 Oxygen, Dissolved Saltwater	7782447							EPA-822R-00-012
35 Diazinon	333415	0.17	0.17	0.82	0.82			71FR9336
36 Parathion	56382	0.065 ^I	0.013 ^I					Gold Book
37 Pentachlorobenzene	608935					1.4 ^E	1.5 ^E	65FR66443
38 pH	—		6.5 - 9 ^F		6.5 - 8.5 ^{F,K}	5 - 9		Gold Book
39 Phosphorus Elemental	7723140				0.1 ^{F,K}			Gold Book
40 Nutrients	—	depth for lakes; turbidity for streams and rivers) (& Level III Ecoregional criteria)						
41 Solids Dissolved and Salinity	—					250,000 ^A		Gold Book
42 Solids Suspended and Turbidity	—	NARRATIVE STATEMENT—SEE DOCUMENT F						Gold Book
43 Sulfide-Hydrogen Sulfide	7783064		2.0 ^F		2.0 ^F			Gold Book
44 Tainting Substances	—	NARRATIVE STATEMENT—SEE DOCUMENT						Gold Book
45 Temperature	—	SPECIES DEPENDENT CRITERIA—SEE DOCUMENT M						Gold Book
46 Tetrachlorobenzene, 1,2,4,5-	95943					0.97 ^F	1.1 ^F	65FR66443
47 Tributyltin (TBT)	—	0.46 ^O	0.072 ^O	0.42 ^O	0.0074 ^O			69FR342
48 Trichlorophenol, 2,4,5-	95954					1,800 ^{B,E}	3,600 ^{B,E}	65FR66443

Footnotes

- ^A This human health criterion is the same as originally published in the Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is used in the 1986 *Quality Criteria for Water*.
- ^B The organoleptic effect criterion is more stringent than the value presented in the non priority pollutants table.
- ^C A more stringent Maximum Contaminant Level (MCL) has been issued by EPA under the Safe Drinking Water Act. Refer to drinking water regulations 40CFR141 or Safe Drinking Water Hotline (1-800-426-4791) for values.
- ^D According to the procedures described in the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, except possibly where the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
- ^E This criterion has been revised to reflect EPA's q1* or RID, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) used to derive this criterion is 10,000.
- ^F The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).
- ^G This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*), except possibly where the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
- ^H This criterion is based on carcinogenicity of 10⁻⁶ risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10⁻⁵, move the decimal point in the recommended value one place to the right).
- ^I This value for aluminum is expressed in terms of total recoverable metal in the water column.
- ^J This value is based on a 304(a) aquatic life criterion that was issued in the 1995 Updates: *Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-B-95-001).
- ^K According to page 181 of the Red Book:
- ^L There are three major reasons why the use of Water-Effect Ratios might be appropriate:
- The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH = 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, 1973-1974" indicate that the toxicity of aluminum to striped bass increases with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that the toxicity of aluminum is not based on dissolved aluminum alone.
 - In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that the toxicity of aluminum is not based on dissolved aluminum alone.
 - EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured.
- ^M U.S. EPA, 1973. *Water Quality Criteria 1972*. EPA-R3-73-033. National Technical Information Service, Springfield, VA.; U.S. EPA, 1977. *Temperature Criteria for Freshwater Fish Protocol*. EPA-440/5-77-003. National Technical Information Service, Springfield, VA.
- ^N U.S. EPA, 1986. *Ambient Water Quality Criteria for Dissolved Oxygen*. EPA 440/5-86-003. National Technical Information Service, Springfield, VA.
- ^O This criterion for manganese is not based on toxic effects, but rather is intended to minimize objectionable qualities such as laundry stains and objectionable tastes in beverages.
- ^P Lakes and Reservoirs in Nutrient Ecoregion: II EPA 822-B-00-007, III EPA 822-B-01-008, IV EPA 822-B-01-009, V EPA 822-B-01-010, VI EPA 822-B-00-008, VII EPA 822-B-00-009.
- ^Q EPA announced the availability of a draft updated tributyltin (TBT) document on August 7, 1997 (62FR42554). The Agency has reevaluated this document and anticipates releasing an updated document.

Select Chemical	CAS Number	Chemical - CAS Number	FW CMC (µg/L)
Priority Pollutants			
Antimony	7440360	Antimony - 7440360	
Arsenic	7440382	Arsenic - 7440382	340
Beryllium	7440417	Beryllium - 7440417	
Cadmium	7440439	Cadmium - 7440439	2
Chromium (III)	16065831	Chromium (III) - 16065831	570
Chromium (VI)	18540299	Chromium (VI) - 18540299	16
Copper	7440508	Copper - 7440508	13
Lead	7439921	Lead - 7439921	65
Mercury	7439976	Mercury - 7439976	1.4
Methylmercury	22967926	Methylmercury - 22967926	1.4
Nickel	7440020	Nickel - 7440020	470
Selenium	7782492	Selenium - 7782492	
Silver	7440224	Silver - 7440224	3.2
Thallium	7440280	Thallium - 7440280	
Zinc	7440666	Zinc - 7440666	120
Cyanide	57125	Cyanide - 57125	22
Asbestos	1332214	Asbestos - 1332214	
2,3,7,8-TCDD (Dioxin)	1746016	2,3,7,8-TCDD (Dioxin) - 1746016	
Acrolein	107028	Acrolein - 107028	
Acrylonitrile	107131	Acrylonitrile - 107131	
Benzene	71432	Benzene - 71432	
Bromoform	75252	Bromoform - 75252	
Carbon Tetrachloride	56235	Carbon Tetrachloride - 56235	
Chlorobenzene	108907	Chlorobenzene - 108907	
Chlorodibromomethane	124481	Chlorodibromomethane - 124481	
Chloroethane	75003	Chloroethane - 75003	
2-Chloroethylvinyl Ether	110758	2-Chloroethylvinyl Ether - 110758	
Chloroform	67663	Chloroform - 67663	
Dichlorobromomethane	75274	Dichlorobromomethane - 75274	
1,1-Dichloroethane	75343	1,1-Dichloroethane - 75343	
1,2-Dichloroethane	107062	1,2-Dichloroethane - 107062	
1,1-Dichloroethylene	75354	1,1-Dichloroethylene - 75354	
1,2-Dichloropropane	78875	1,2-Dichloropropane - 78875	
1,3-Dichloropropene	542756	1,3-Dichloropropene - 542756	
Ethylbenzene	100414	Ethylbenzene - 100414	
Methyl Bromide	74839	Methyl Bromide - 74839	
Methyl Chloride	74873	Methyl Chloride - 74873	
Methylene Chloride	75092	Methylene Chloride - 75092	
1,1,2,2-Tetrachloroethane	79345	1,1,2,2-Tetrachloroethane - 79345	
Tetrachloroethylene	127184	Tetrachloroethylene - 127184	

FW CMC remark	FW CCC (µg/L)	FW CCC remark	SW CMC (µg/L)	SW CMC remark	SW CCC (µg/L)	SW CCC remark
A,D,K	150	A,D,K	69	A,D,bb	36	A,D,bb
D,E,K,bb	0.25	D,E,K,bb	40	D,bb	8.8	D,bb
D,E,K	74	D,E,K				
D,K	11	D,K	1,100	D,bb	50	D,bb
D,E,K,cc	9	D,E,K,cc	4.8	D,cc,ff	3.1	D,cc,ff
D,E,bb,gg	2.5	D,E,bb,gg	210	D,bb	8.1	D,bb
D,K,hh	0.77	D,K,hh	1.8	D,ee,hh	0.94	D,ee,hh
D,K,hh	0.77	D,K,hh	1.8	D,ee,hh	0.94	D,ee,hh
D,E,K	52	D,E,K	74	D,bb	8.2	D,bb
L,R,T	5	T	290	D,bb,dd	71	D,bb,dd
D,E,G			1.9	D,G		
D,E,K	120	D,E,K	90	D,bb	81	D,bb
K,Q	5.2	K,Q	1	Q,bb	1	Q,bb

HH W+O (µg/L)	HH WO remark	HH OO (µg/L)	HH OO remark	FR Cite/ Source
5.6	B	640	B	65FR66443
0.018	C,M,S	0.14	C,M,S	65FR31682, 57FR60848
	Z			65FR31682
	Z			EPA-822-R-01-001, 65FR31682
	TotalZ			EPA820/B-96-001, 65FR31682
	TotalZ			65FR31682
1,300	U			65FR31682
		0.3 mg/kg	J	65FR31682
		0.3 mg/kg	J	62FR42160, EPA823-R-01-001
610	B	4,600	B	62FR42160, EPA823-R-01-001
170	Z	4200		65FR31682
				62FR42160, 65FR31682, 65FR66443
				65FR31682
0.24		0.47		68FR75510
7,400	U	26,000	U	65FR31682, 65FR66443
140	jj	140	jj	57FR60848, 68FR75510
7 million fibers/L	I			57FR60848
5.00E-09	C	5.10E-09	C	65FR66443
190		290		65FR66443
0.051	B,C	0.25	B,C	65FR66443
2.2	B,C	51	B,C	IRIS 01/19/00, 65FR66443
4.3	B,C	140	B,C	65FR66443
0.23	B,C	1.6	B,C	65FR66443
130	Z,U	1,600	U	68FR75510
0.4	B,C	13	B,C	65FR66443
5.7	C,P	470	C,P	62FR42160
0.55	B,C	17	B,C	65FR66443
0.38	B,C	37	B,C	65FR66443
330		7,100		68FR75510
0.5	B,C	15	B,C	65FR66443
0.34	C	21	C	68FR75510
530		2,100		68FR75510
47	B	1,500	B	65FR66443
				65FR31682
4.6	B,C	590	B,C	65FR66443
0.17	B,C	4	B,C	65FR66443
0.69	C	3.3	C	65FR66443

Toluene	108883 Toluene - 108883	
1,2-Trans-Dichloroethylene	156605 1,2-Trans-Dichloroethylene - 156605	
1,1,1-Trichloroethane	71556 1,1,1-Trichloroethane - 71556	
1,1,2-Trichloroethane	79005 1,1,2-Trichloroethane - 79005	
Trichloroethylene	79016 Trichloroethylene - 79016	
Vinyl Chloride	75014 Vinyl Chloride - 75014	
2-Chlorophenol	95578 2-Chlorophenol - 95578	
2,4-Dichlorophenol	120832 2,4-Dichlorophenol - 120832	
2,4-Dimethylphenol	105679 2,4-Dimethylphenol - 105679	
2-Methyl-4,6-Dinitrophenol	534521 2-Methyl-4,6-Dinitrophenol - 534521	
2,4-Dinitrophenol	51285 2,4-Dinitrophenol - 51285	
2-Nitrophenol	88755 2-Nitrophenol - 88755	
4-Nitrophenol	100027 4-Nitrophenol - 100027	
3-Methyl-4-Chlorophenol	59507 3-Methyl-4-Chlorophenol - 59507	
Pentachlorophenol	87865 Pentachlorophenol - 87865	19
Phenol	108952 Phenol - 108952	
2,4,6-Trichlorophenol	88062 2,4,6-Trichlorophenol - 88062	
Acenaphthene	83329 Acenaphthene - 83329	
Acenaphthylene	208968 Acenaphthylene - 208968	
Anthracene	120127 Anthracene - 120127	
Benzidine	92875 Benzidine - 92875	
Benzo(a) Anthracene	56553 Benzo(a) Anthracene - 56553	
Benzo(a) Pyrene	50328 Benzo(a) Pyrene - 50328	
Benzo(b) Fluoranthene	205992 Benzo(b) Fluoranthene - 205992	
Benzo(ghi) Perylene	191242 Benzo(ghi) Perylene - 191242	
Benzo(k) Fluoranthene	207089 Benzo(k) Fluoranthene - 207089	
Bis(2-Chloroethoxy) Methane	111911 Bis(2-Chloroethoxy) Methane - 111911	
Bis(2-Chloroethyl) Ether	111444 Bis(2-Chloroethyl) Ether - 111444	
Bis(2-Chloroisopropyl) Ether	108601 Bis(2-Chloroisopropyl) Ether - 108601	
Bis(2-Ethylhexyl) PhthalateX	117817 Bis(2-Ethylhexyl) PhthalateX - 117817	
4-Bromophenyl Phenyl Ether	101553 4-Bromophenyl Phenyl Ether - 101553	
Butylbenzyl PhthalateW	85687 Butylbenzyl PhthalateW - 85687	
2-Chloronaphthalene	91587 2-Chloronaphthalene - 91587	

F,K

15

F,K

13

bb

7.9

bb

4-Chlorophenyl Phenyl Ether Chrysene	7005723 218019	4-Chlorophenyl Phenyl Ether - 7005723 Chrysene - 218019
Dibenzo(a,h)Anthracene	53703	Dibenzo(a,h)Anthracene - 53703
1,2-Dichlorobenzene	95501	1,2-Dichlorobenzene - 95501
1,3-Dichlorobenzene	541731	1,3-Dichlorobenzene - 541731
1,4-Dichlorobenzene	106467	1,4-Dichlorobenzene - 106467
3,3'-Dichlorobenzidine	91941	3,3'-Dichlorobenzidine - 91941
Diethyl PhthalateW	84662	Diethyl PhthalateW - 84662
Dimethyl PhthalateW	131113	Dimethyl PhthalateW - 131113
Di-n-Butyl PhthalateW	84742	Di-n-Butyl PhthalateW - 84742
2,4-Dinitrotoluene	121142	2,4-Dinitrotoluene - 121142
2,6-Dinitrotoluene	606202	2,6-Dinitrotoluene - 606202
Di-n-Octyl Phthalate	117840	Di-n-Octyl Phthalate - 117840
1,2-Diphenylhydrazine	122667	1,2-Diphenylhydrazine - 122667
Fluoranthene	206440	Fluoranthene - 206440
Fluorene	86737	Fluorene - 86737
Hexachlorobenzene	118741	Hexachlorobenzene - 118741
Hexachlorobutadiene	87683	Hexachlorobutadiene - 87683
Hexachlorocyclopentadiene	77474	Hexachlorocyclopentadiene - 77474
Hexachloroethane	67721	Hexachloroethane - 67721
Ideno(1,2,3-cd)Pyrene	193395	Ideno(1,2,3-cd)Pyrene - 193395
Isophorone	78591	Isophorone - 78591
Naphthalene	91203	Naphthalene - 91203
Nitrobenzene	98953	Nitrobenzene - 98953
N-Nitrosodimethylamine	62759	N-Nitrosodimethylamine - 62759
N-Nitrosodi-n-Propylamine	621647	N-Nitrosodi-n-Propylamine - 621647
N-Nitrosodiphenylamine	86306	N-Nitrosodiphenylamine - 86306
Phenanthrene	85018	Phenanthrene - 85018
Pyrene	129000	Pyrene - 129000
1,2,4-Trichlorobenzene	120821	1,2,4-Trichlorobenzene - 120821
Aldrin	309002	Aldrin - 309002
alpha-BHC	319846	alpha-BHC - 319846
beta-BHC	319857	beta-BHC - 319857

G

1.3

G

0.0038 B,C		0.018 B,C	65FR66443
0.0038 B,C		0.018 B,C	65FR66443
420		1,300	68FR75510
320		960	65FR66443
63		190	68FR75510
0.021 B,C		0.028 B,C	65FR66443
17,000 B		44,000 B	65FR66443
270,000		1,100,000	65FR66443
2,000 B		4,500 B	65FR66443
0.11 C		3.4 C	65FR66443
0.036 B,C		0.2 B,C	65FR66443
130 B		140 B	65FR66443
1,100 B		5,300 B	65FR66443
0.00028 B,C		0.00029 B,C	65FR66443
0.44 B,C		18 B,C	65FR66443
40 U		1,100 U	68FR75510
1.4 B,C		3.3 B,C	65FR66443
0.0038 B,C		0.018 B,C	65FR66443
35 B,C		960 B,C	65FR66443
17 B		690 B,H,U	65FR66443
0.00069 B,C		3 B,C	65FR66443
0.005 B,C		0.51 B,C	65FR66443
3.3 B,C		6 B,C	65FR66443
830 B		4,000 B	65FR66443
35		70	68FR75510
0.000049	B,C	0.00005	B,C 65FR31682, 65FR66443
0.0026	B,C	0.0049	B,C 65FR66443
0.0091	B,C	0.017	B,C 65FR66443

gamma-BHC (Lindane)	58899	gamma-BHC (Lindane) - 58899	0.95
delta-BHC	319868	delta-BHC - 319868	
Chlordane	57749	Chlordane - 57749	2.4
4,4'-DDT	50293	4,4'-DDT - 50293	1.1
4,4'-DDE	72559	4,4'-DDE - 72559	
4,4'-DDD	72548	4,4'-DDD - 72548	
Dieldrin	60571	Dieldrin - 60571	0.24
alpha-Endosulfan	959988	alpha-Endosulfan - 959988	0.22
beta-Endosulfan	33213659	beta-Endosulfan - 33213659	0.22
Endosulfan Sulfate	1031078	Endosulfan Sulfate - 1031078	
Endrin	72208	Endrin - 72208	0.086
Endrin Aldehyde	7421934	Endrin Aldehyde - 7421934	
Heptachlor	76448	Heptachlor - 76448	0.52
Heptachlor Epoxide	1024573	Heptachlor Epoxide - 1024573	0.52
Polychlorinated Biphenyls (PCBs)		Polychlorinated Biphenyls (PCBs) -	
Toxaphene	8001352	Toxaphene - 8001352	0.73
Non Priority Pollutants			
Alkalinity	no CAS	Alkalinity - no CAS	
Aluminum (pH 6.5 – 9.0)	7429905	Aluminum (pH 6.5 – 9.0) - 7429905	750
Ammonia	7664417	Ammonia - 7664417	
Aesthetic Qualities	no CAS	Aesthetic Qualities - no CAS	
Bacteria	no CAS	Bacteria - no CAS	
Barium	7440393	Barium - 7440393	
Boron	no CAS	Boron - no CAS	
Chloride	16887006	Chloride - 16887006	860000
Chlorine	7782505	Chlorine - 7782505	19
Chlorophenoxy Herbicide (2,4,5,-TP)	93721	Chlorophenoxy Herbicide (2,4,5,-TP) - 93721	
Chlorophenoxy Herbicide (2,4-D)	94757	Chlorophenoxy Herbicide (2,4-D) - 94757	
Chloropyrifos	2921882	Chloropyrifos - 2921882	0.083
Color	no CAS	Color - no CAS	
Demeton	8065483	Demeton - 8065483	
Ether, Bis(Chloromethyl)	542881	Ether, Bis(Chloromethyl) - 542881	

	K			0.16	G		
	G	0.0043	G,aa	0.09	G	0.004	G,aa
	G,ii	0.001	G,aa,ii	0.13	G,ii	0.001	G,aa,ii
	K	0.056	K,O	0.71	G	0.0019	G,aa
	G,Y	0.056	G,Y	0.034	G,Y	0.0087	G,Y
	G,Y	0.056	G,Y	0.034	G,Y	0.0087	G,Y
	K	0.036	K,O	0.037	G	0.0023	G,aa
	G	0.0038	G,aa	0.053	G	0.0036	G,aa
	G,V	0.0038	G,V,aa	0.053	G,V	0.0036	G,V,aa
		0.014	N,aa			0.03	N,aa
		0.0002	aa	0.21		0.0002	aa
		20000	F				
	G,I	87	G,I,L				
FRESHWATER			FRESHWATER				
CRITERIA ARE pH,			CRITERIA ARE pH,		SALTWATER		SALTWATER
Temperature and			Temperature and		CRITERIA ARE pH		CRITERIA ARE pH
Life-stage			Life-stage		AND		AND
DEPENDENT—SEE			DEPENDENT—SEE		TEMPERATURE		TEMPERATURE
DOCUMENT D			DOCUMENT D		DEPENDENT		DEPENDENT
NARRATIVE							
STATEMENT—SEE							
DOCUMENT							
FOR PRIMARY							
RECREATION AND							
SHELLFISH							
USES—SEE							
DOCUMENT							
NARRATIVE							
STATEMENT—SEE							
DOCUMENT	G	230000	G				
		11		13		7.5	
	G	0.041	G	0.011	G	0.0056	G
NARRATIVE							
STATEMENT—SEE							
DOCUMENT F							
		0.1	F			0.1	F

0.98		1.8	65FR31682, 68FR75510
0.0008	B,C	0.00081	B,C 65FR31682, 65FR66443
0.00022	B,C	0.00022	B,C 65FR31682, 65FR66443
0.00022	B,C	0.00022	B,C 65FR66443
0.00031	B,C	0.00031	B,C 65FR66443
0.000052	B,C	0.000054	B,C 65FR31682, 65FR66443
62	B	89	B 65FR31682, 65FR66443
62	B	89	B 65FR31682, 65FR66443
62	B	89	B 65FR66443
0.059		0.06	65FR31682, 68FR75510
0.29	B	0.3	B,H 65FR66443
0.000079	B,C	0.000079	B,C 65FR31682, 65FR66443
0.000039	B,C	0.000039	B,C 65FR31682, 65FR66443
0.000064	B,C,N	0.000064	B,C,N 65FR31682, 65FR66443
0.00028	B,C	0.00028	B,C 65FR31682, 65FR66443

Gold Book
53FR33178

EPA822-R-99-014, EPA440/5-88-004

Gold Book

1,000	A		Gold Book Gold Book
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Gold Book
53FR19028
Gold Book

10	A		Gold Book
100	A,C		Gold Book Gold Book

0.0001	E, H	0.00029	Gold Book Gold Book E,H 65FR66443
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Gases, Total Dissolved	no CAS	Gases, Total Dissolved - no CAS	
Guthion	86500	Guthion - 86500	
Hardness	no CAS	Hardness - no CAS	
Hexachlorocyclo-hexane-Technical	319868	Hexachlorocyclo-hexane-Technical - 319868	
Iron	7439896	Iron - 7439896	
Malathion	121755	Malathion - 121755	
Manganese	7439965	Manganese - 7439965	
Methoxychlor	72435	Methoxychlor - 72435	
Mirex	2385855	Mirex - 2385855	
Nitrates	14797558	Nitrates - 14797558	
Nitrosamines	no CAS	Nitrosamines - no CAS	
Dinitrophenols	25550587	Dinitrophenols - 25550587	
Nonylphenol	1044051	Nonylphenol - 1044051	28
Nitrosodibutylamine, N	924163	Nitrosodibutylamine, N - 924163	
Nitrosodiethylamine, N	55185	Nitrosodiethylamine, N - 55185	
Nitrosopyrrolidine, N	930552	Nitrosopyrrolidine, N - 930552	
Oil and Grease	no CAS	Oil and Grease - no CAS	
Oxygen, Dissolved Freshwater Oxygen,		Oxygen, Dissolved Freshwater Oxygen,	
Dissolved Saltwater	7782447	Dissolved Saltwater - 7782447	
Diazinon	333415	Diazinon - 333415	0.17
Parathion	56382	Parathion - 56382	0.065
Pentachlorobenzene	608935	Pentachlorobenzene - 608935	
pH	no CAS	pH - no CAS	
Phosphorus Elemental	7723140	Phosphorus Elemental - 7723140	
Nutrients	no CAS	Nutrients - no CAS	
Solids Dissolved and Salinity	no CAS	Solids Dissolved and Salinity - no CAS	
Solids Suspended and Turbidity	no CAS	Solids Suspended and Turbidity - no CAS	
Sulfide-Hydrogen Sulfide	7783064	Sulfide-Hydrogen Sulfide - 7783064	

NARRATIVE
STATEMENT—SEE
DOCUMENT F

0.01

F

0.01

F

NARRATIVE
STATEMENT—SEE
DOCUMENT

1000

F

0.1

F

0.1

F

0.03

F

0.001

F

0.03

0.001

F

F

6.6

7

1.7

NARRATIVE
STATEMENT—SEE
DOCUMENT F
WARMWATER
AND COLDWATER
MATRIX—SEE
DOCUMENT N
SALTWATER—SEE
DOCUMENT

0.17

0.82

0.82

J

0.013

J

6.5 – 9

F

6.5 – 8.5

F,K

0.1

F,K

See EPA's
Ecoregional
criteria for Total
Phosphorus, Total
Nitrogen,
Chlorophyll a and
Water Clarity
(Secchi depth for
lakes; turbidity for
streams and
rivers) (& Level III
Ecoregional
criteria)

NARRATIVE
STATEMENT—SEE
DOCUMENT F

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			Gold Book Gold Book
			Gold Book
0.0123		0.0414	Gold Book
300	A		Gold Book
			Gold Book
50	A,O	100	A Gold Book
100	A,C		Gold Book
			Gold Book
10,000	A		Gold Book
0.0008		1.24	Gold Book
69		5300	65FR66443
			71FR9337
0.0063	A,H	0.22	A,H 65FR66443
0.0008	A,H	1.24	A,H Gold Book
0.016	H	34	H 65FR66443
			Gold Book
			Gold Book, EPA-822R-00-012
			71FR9336
			Gold Book
1.4	E	1.5	E 65FR66443
5-9			Gold Book
			Gold Book
			P
250,000	A		Gold Book
			Gold Book
			Gold Book

Tainting Substances	no CAS	Tainting Substances - no CAS	
Temperature	no CAS	Temperature - no CAS	
Tetrachlorobenzene,1,2,4,5-	95943	Tetrachlorobenzene,1,2,4,5- - 95943	
Tributyltin (TBT)	no CAS	Tributyltin (TBT) - no CAS	0.46
Trichlorophenol,2,4,5-	95954	Trichlorophenol,2,4,5- - 95954	

NARRATIVE
STATEMENT—SEE
DOCUMENT
SPECIES
DEPENDENT
CRITERIA—SEE
DOCUMENT M

Q 0.072 Q 0.42 Q 0.0074 Q

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0.97	E	1.1	Gold Book E 65FR66443 69FR342
1,800	B,E	3,600	B,E 65FR66443